



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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Ref: 8WD-CWW

Jason Thomas
Wyoming Department of Environmental Quality
Water Quality Division
200 West 17th Street
Cheyenne, Wyoming 82002

RE: Comments on Draft Aethon Energy Operating, LLC Permit - WY0002062

Dear Mr. Thomas:

The Wyoming Department of Environmental Quality (WDEQ) published the draft Aethon Energy Operating, LLC permit, WY0002062 on January 17, 2020 for a 30-day public comment period. The comment period closes on February 17, 2020. The EPA reviewed the draft permit and provides the comments below.

1. Temperature Limit

The draft permit includes a year-round temperature limit of 88°F. The EPA has four concerns with this limit and associated monitoring requirements as these relate to protection of WDEQ's water quality standards (WQS) in Chapter 1 of Wyoming's Water Quality Rules and Regulations, "Wyoming Surface Water Quality Standards." The EPA's concerns and associated recommendations are discussed in more detail in the enclosure:

- a. The EPA is unclear as to the basis for assuming a 20-degree Fahrenheit decrease will occur as the water travels from the Aethon outfalls to Badwater Creek. The Statement of Basis (SoB) should be updated to include the rationale for and data to support this assumption. Additionally, more frequent temperature data will help WDEQ determine if this assumption holds under a range of conditions (i.e., interannual and seasonal variability).
- b. The EPA is concerned that a year-round limit of 88°F may not protect the temperature criteria for protection of aquatic life uses (Chapter 1, Section 25) in Alkali and Badwater Creeks as required by 40 CFR 122.24(d)(1).
- c. The Chapter 1, Section 25(b) WQS, which limits water temperature increases to 2 degrees, does not appear to have been considered in the development of the draft permit limits as required by 40 CFR 122.24(d)(1). This WQS applies to Badwater Creek.
- d. The EPA is also concerned the quarterly temperature monitoring frequency may not be frequent enough to capture the variability associated with environmental conditions, the temperature of the discharge itself, or the rate of expected cooling. Additionally, the lack of instream reference monitoring locations in Alkali and Badwater Creeks may not provide sufficient data to assess

the impact if the discharge on the Chapter, Section 25(b) WQS in Badwater Creek, which limits the temperature increase attributable to the discharge to 2-degrees.

2. Whole Effluent Toxicity (WET) Requirements

The EPA has five areas of comments regarding WET requirements in the draft permit:

- a. The draft permit references outdated documents: the “Region VIII Guidance for Chronic Whole Effluent Reporting” and “Region VIII EPA NPDES Acute Test Conditions – Static Renewal Whole Effluent Toxicity Tests.” These documents should be removed. It is recommended that the permit incorporate the requirements of the “Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, Fifth Edition, October 2002, EPA-821-R-02-012” (EPA acute method manual) by reference.
- b. The draft permit does not specify WET test requirements to be used by the lab. To ensure the WET test is run consistently and is representative of existing conditions instream, the permit should specify laboratory testing requirements to be used by the lab such as: renewal frequency, test temperature, dilution series required, and dilution water and hardness. These laboratory testing requirements and reporting requirements should be in line with the EPA acute method manual.
- c. The SoB does not justify the use of the less sensitive species, *Daphnia magna*. Per 40 CFR 122.44(d)(1)(ii), “When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water.” In addition, per 40 CFR 122.44(d)(1)(v), “Limits on whole effluent toxicity are not necessary where the permitting authority demonstrates in the fact sheet or statement of basis of the NPDES permit, using the procedures in paragraph (d)(1)(ii) of this section, that chemical-specific limits for the effluent are sufficient to attain and maintain applicable numeric and narrative State water quality standards.” To meet regulatory requirements, the SoB should provide more detail to clearly support and justify the proposed use of a less sensitive test species (e.g. *Daphnia magna* replacing *Ceriodaphnia dubia*) in line with these regulations.
- d. Part I.A.3.a of the draft permit states the TIE/TRE process “shall be implemented on a schedule established by the DEQ,” which is neither clear nor specific and could cause prolonged delays in the TIE/TRE process. Language in the draft permit and SoB for follow-up testing and Toxicity Identification Evaluation and Toxicity Reduction Evaluation (TIE/TRE) requirements should include a specific schedule of events and timelines for completion (e.g. TIE/TRE should begin within 1 month and should not exceed 6 months). In addition, the term “the DEQ” has not been previously used in the SoB or permit and should be replaced with “WDEQ” if this statement is meant to refer to the Wyoming Department of Environmental Quality.
- e. Part I.A.3.b of the draft permit contains unclear requirements. It states, “Failure to initiate, or conduct an adequate TIE-TRE, or delays in the conduct of such test, shall not be considered a justification for noncompliance with the whole effluent toxicity limits contained in this permit. A

justification for noncompliance with the whole effluent toxicity limits contained in this permit. A TRE plan needs to be submitted to the permitting authority within 45 days after confirmation of the continuance of effluent toxicity.” The EPA recommends that “delays in the conduct of such test” be rewritten, as the meaning of this portion of the statement is unclear. Additionally, the EPA recommends that “continuance of effluent toxicity” be clearly defined (e.g., after receipt of results for a second consecutive WET test failure, the date of a second consecutive WET test failure, etc.) so the due date for submission of the TRE plan is clear.

Again, thank you for the opportunity to comment on this draft permit. If you have any questions concerning the above, please contact Stephanie DeJong of my staff at (303) 312-6362 or dejong.stephanie@epa.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Judy Bloom', with a long, sweeping horizontal line extending to the right.

Judy Bloom, Chief
Clean Water Branch

Enclosure

EPA Detailed Temperature Comments on Draft NPDES Permit Renewal for Aethon Energy Operating LLC -WY0002062

The temperature limit may not achieve State water quality standards, and not all relevant temperature water quality standards appear to have been evaluated for reasonable potential.

40 CFR 122.24(d)(1) requires permits to contain requirements to “[a]chieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality.” Chapter 1 of Wyoming’s Water Quality Rules and Regulations, “Wyoming Surface Water Quality Standard,” contains the State’s water quality standards (WQS).

Alkali Creek is designated Class 3B for “Aquatic Life Other than Fish.” Per Chapter 1, Section 4(c)(ii), “Class 3B waters are intermittent and ephemeral streams with sufficient hydrology to normally support and sustain communities of aquatic life including invertebrates, amphibians, or other flora and fauna which inhabit waters of the state at some stage of their life cycle.”¹ Badwater Creek is designated Class 2AB for “Fisheries and Drinking Water” and is cold water. Per Chapter 1, Section 4(b)(i), “Class 2AB waters are those known to support game fish populations or spawning and nursery areas at least seasonally...Class 2AB waters include all permanent and seasonal game fisheries...”²

Chapter 1, Section 25(d) indicates 68°F is a maximum temperature not be exceeded in Class 1, 2AB, 2A, 2B and 2C waters, which includes Badwater Creek. Wyoming’s WQS include two other relevant standards at Section 25(a) and (b). Section 25(a) applies to Alkali and Badwater Creeks as a Class 3B and 2AB waters, and Section 25(b) applies to Badwater Creek as a Class 2AB water:

- (a) For Class 1, 2 and 3 waters, pollution attributable to the activities of man shall not change ambient water temperatures to levels which result in harmful acute or chronic effects to aquatic life, or which would not fully support existing and designated uses.
- (b) When ambient temperatures are above 60 degrees Fahrenheit (15.6 degrees Celsius) in all Class 1, 2AB and 2B waters which are cold water fisheries, pollution attributable to the activities of man shall not result in an increase of more than 2 degrees Fahrenheit (1.1 degree Celsius) in existing temperatures.

The draft permit includes a year-round temperature limit of 88°F based on the conclusion that the Aethon discharge has reasonable potential for the facility to exceed the instream temperature standard for Badwater Creek. The revised draft permit’s Statement of Basis (SoB) explains:

Data collected by WDEQ in 2019 indicates that average background conditions in the warmer months of the year (April – September) already exceed 68 degrees naturally in Badwater Creek. The average temperature for that period was measured at 69 degrees F in Badwater Creek, upstream of any influence from the Moneta Divide facility. The Moneta Divide effluent enters Badwater Creek at around 77 degrees Fahrenheit. Based on this, WDEQ has determined that there is a reasonable potential for this facility to exceed the instream standard for Temperature in Badwater Creek. At a background temperature of 68 degrees F or higher, no assimilative capacity exists in Badwater Creek for added temperature. Therefore, the goal of this permit with

¹ Class 3B waters include the following designated uses: other aquatic life, recreation, wildlife, agriculture, industry and scenic value.

² Class 2AB waters include the following designated uses: drinking water, game fish, non-game fish, fish consumption, other aquatic life, recreation, wildlife, agriculture, industry and scenic value.

regard to temperature control is to ensure that discharges entering Badwater Creek from Alkali Creek are no greater than 68 degrees F by the time they reach Badwater Creek (p. 5).

The EPA agrees with the conclusion that the Aethon discharge has reasonable potential for the facility to exceed the instream temperature standard in Section 25(d) for Badwater Creek. The EPA has four concerns and associated recommendations with the temperature limit and monitoring requirements in the draft permit:

- a. The temperature limit may not protect the temperature standard in Section 25(d) for Badwater Creek of 68°F as required by 40 CFR 122.24(d)(1). The EPA is unclear as to the basis for assuming a 20-degree Fahrenheit decrease will occur as the water travels from the Aethon outfalls to Badwater Creek. The SoB should be updated to include the rationale for this assumption. Additionally, the EPA recommends more frequent temperature monitoring to help WDEQ determine if this assumption holds under a range of conditions (i.e., interannual and seasonal variability). More frequent data collection would also better support water quality modeling if necessary to determine the expected cooling under a range of conditions as effluent flows down Alkali Creek.
- b. The EPA is concerned that a year-round limit of 88°F may not protect the aquatic life uses in Alkali and Badwater Creeks during periods of colder water temperature both within, and outside of, the April-September window as required by 40 CFR 122.24(d)(1) and described at Wyoming Surface WQS Chapter 1, Section 25(a). Although these requirements are narrative, WDEQ is working on developing numeric temperature criteria.³ The literature suggests an annual instream temperature goal of 68 to 88°F may not be protective of the aquatic communities expected to occur in Badwater, a Class 2AB cold water stream, and Alkali Creek, a Class 3B stream anticipated to have a macroinvertebrate community.⁴ It is reasonable to assume that cooling rates (and resulting instream effluent and instream temperatures) and thermal requirements of the aquatic community will both vary seasonally. More frequent monitoring will better characterize reasonable potential for the discharge to cause or contribute to exceedances of the requirements at Section 25(a).
- c. Section 25(b) does not appear to have been considered in the development of the draft permit limits as required by 40 CFR 122.24(d)(1). This WQS applies to Badwater Creek as a Class 2AB cold water fishery. The available water temperature data indicate that temperatures within the April to September period are sometimes cooler than 68°F⁵ making implementation of Section 25(b)'s 2-degree limit on increases to water temperature relevant. WDEQ should evaluate the reasonable potential for this WQS to be exceeded in Badwater Creek and include this as part of its rationale of a temperature limit.
- d. Quarterly temperature monitoring may not be frequent enough to capture the variability associated with environmental conditions, the temperature of the discharge itself, or the rate of expected cooling. Additionally, the lack of instream reference locations in Alkali Creek upstream

³ <http://deq.wyoming.gov/wqd/surface-water-quality-standards-2/resources/changes-designated-uses-and-site-specific-criteria/>

⁴ Elliott 1981, Coutant 1999, Armour 1991, Mandeville et al 2019, and Peterson 2017.

⁵ Data are not available from November through April.

of the outfalls and in Badwater Creek upstream of the confluence with Alkali Creek may make it difficult to understand the impact of the discharge on instream temperature. The draft permit requires quarterly temperature monitoring at the outfalls and four instream monitoring points:

- DMP1 – located at the very downstream end of the project area on Alkali Creek
- BWC1 – Located on Badwater Creek below its confluence with Alkali Creek
- BWB1 – Located in Badwater Bay in Boysen Reservoir
- WRC1 – Located in Wind River Canyon (below the Boysen Reservoir dam)

More frequent temperature monitoring, including at background or reference locations in Alkali and Badwater Creek, is recommended. Monitoring at additional background locations appears necessary to assess the Section 25(b), 2-degree maximum increase requirement unless WDEQ has another data set to characterize “existing temperatures.” This will enable identification of when water temperatures are between 60 and 68°F and assessment of what change above background is occurring that is attributable to the discharge. Temperature loggers are a low-cost, deployable tool WDEQ could consider to monitor instream temperature more frequently.

References

Armour, C.L. 1991. Guidance for evaluating and recommending temperature regimes to protect fish. U.S. Fish Wildlife Service Biological Report 90(20).

Coutant, C.C. 1999. Perspectives on Temperature in the Pacific Northwest's Fresh Waters. Oak Ridge National Laboratory. June 1999. ORNL/TM-1999/44

Elliott, J.M. 1981. “Some Aspects of Thermal Stress on Freshwater Teleosts.” From *Stress and Fish* by A.D. Pickering. Academic Press. 1981.

U.S. EPA. 2013. Revised Deletion Process for the Site-Specific Recalculation Procedure for Aquatic Life Criteria. April 2013. EPA-823-R-13-001.

Mandeville, C.P., F.J. Rahel, L.S. Patterson and A.W. Walters. 2019. Integrating Fish Assemblage Data, Modeled Stream Temperatures, and Thermal Tolerance Metrics to Develop Thermal Guilds for Water Temperature Regulation: Wyoming Case Study. Transactions of the American Fisheries Society 148: 739-754.

Peterson, C.M. 2017. Development of thermal tiers and regulatory criteria for Wyoming stream fishes. M.S. Thesis, Department of Zoology and Physiology. May 2017.